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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/781,211	02/17/2004	Yasuhiro Sawada	1232-5285	1942
27123 7590 11/28/2007 MORGAN & FINNEGAN, L.L.P. 3 WORLD FINANCIAL CENTER NEW YORK, NY 10281-2101			EXAMINER DESIRE, GREGORY M	
			ART UNIT 2624	PAPER NUMBER
			NOTIFICATION DATE 11/28/2007	DELIVERY MODE ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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Office Action Summary

Application No.

10/781,211

Applicant(s)

SAWADA, YASUHIRO

Examiner

Gregory M. Desire

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 17 February 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-66 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-66 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 17 February 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date 10/25/04.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

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DETAILED ACTION

35 USC § 101

35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

Claims 25-49 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter.

The USPTO "Interim Guidelines for Examination of Patent applications for Patent Subject Matter Eligibility" (Official Gazette notice of 22 November 2005), Annex IV, reads as follows:

Descriptive material can be characterized as either "functional descriptive material" or "nonfunctional descriptive material." In this context, "functional descriptive material" consists of data structures and computer programs which impart functionality when employed as a computer component. (The definition of "data structure" is "a physical or logical relationship among data elements, designed to support specific data manipulation functions." The New IEEE standard Dictionary of Electrical and Electronics Terms 308 (5th ed. 1993).) "Nonfunctional descriptive material" includes but is not limited to music, literary works and a compilation or mere arrangement of data.

When function descriptive material is recorded on some computer-readable medium it becomes structurally and functionally interrelated to the medium and will be statutory in most cases since use of technology permit function of the descriptive material to be realized. Compare *In re Lowry*, 32 F.3d 1579, 1583-84, 32USPQ2d 1031, 1035 (Fed. Cir. 1994)(claim to data structure stored on a computer readable medium that increases computer efficiency held statutory) and *Warmerdam*, 33 F. 3d at 1360-61, 31 USPQ2d at 1759 (claim to computer having a specific data structure stored in memory held product-by-process claim) with *Warmerdam*, 33 F.3d at 1361, 31 USPQ2d at 1760 (claim to a data structure per se held nonstatutory).

In contrast, a claimed computer readable medium encoded with a computer program is a computer element which defines structural and function interrelationships between the computer program and the rest of the computer which permit the computer program's functionality to be realized, and is thus statutory, See *Lowry*, 32 F. 3d at 1583-84, 32 USPQ2d at 1035.

1. Claims 25 define instructions embodying functional descriptive material.

However, the claims do not define a computer readable medium or memory and is thus non-statutory for that reason (i.e., "When functional descriptive material is

recorded on some computer-readable medium it becomes structurally and functionally interrelated to the medium and will be statutory in most cases since use of technology permits the function of the descriptive material to be realized: - Guidelines Annex IV). That is, the scope of the presently claimed instructions can range from paper on which the program is written, to a program simply contemplated and memorized by a person. The examiner suggests amending the claim to embody the program on "computer-readable medium" or equivalent in order to make the claim statutory. Any amendment to the claim should be commensurate with its corresponding disclosure. Claims 26-49 depend on claim 25. Therefore are also rejected.

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

1. Claims 1, 10-12, 14, 22-25, 34-36, 38 46-50, 59-61, 63-66 and 50 are rejected under 35 U.S.C. 102(b) as being anticipated by Cabral (5,949,424).

Regarding claims 1, 23, 25, 47, 49- 50 and 65 Cabral discloses,

A first step in which first data showing at least one of a surface shape and taken images of a real existing object is acquired (note fig. 1 , block 100 and col. 8 lines 5-10 and 50-55, object surface $p(u,v)$); and

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A second step in which a bump map (note col. 8 lines 45-50, height field $f(u,v)$ is bump map) for creating a three-dimensional image of the object is generated based on the first data (note col. 8 lines 62-65 examiner interprets three components N_x , N_y and N_z as three-dimension).

Regarding claims 10, 34 and 59 Cabral discloses,

Wherein the first data is image data showing the taken images, and in the second step, by estimating surface reflectance properties of the object based on the image data, the bump map as a component of surface reflectance properties data showing the surface reflectance properties is generated (note col. 9 lines 35-50).

Regarding claims 11, 35 and 60 Cabral discloses,

Wherein the surface reflectance properties data includes data on constants in a reflection model function and data on normal directions constituting the bump map (note col. 9 lines 35-50).

Regarding claims 12, 36 and 61 Cabral discloses,

Wherein the surface reflectance properties data is data specifying a specific reflectance from a reflectance table which shows a series of reflectance corresponding to light source directions and image-taking directions in tangential coordinate systems, and includes data on normal directions forming the bump map (note col. 9 lines 35-50).

Regarding claims 14, 38 and 63 Cabral discloses,

Bump map is generated so that an area of each texel on the bump map becomes substantially equivalent to an area where one pixel of the image data occupies on a surface of the object (note col. 9 lines 36-50).

Regarding claims 22, 46 and 64 Cabral discloses,

Wherein the bump map having a texel number according to information on a specified resolution of the bump map is generated (note col. 14 lines 63-66).

Regarding claims 24, 48 and 66 Cabral discloses,

An image generating step in which a three-dimensional image of the object is generated by using the bump map generated (note fig. 2b, 2020), and an image output step in which the generated three-dimensional image is output (note fig. 2b, 2080).

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 2-9, 13, 15-21, 26-33, 37, 39-45, 51-58 and 62 are rejected under 35 U.S.C. 103(a) as being unpatentable over Cabral et al in view of Krishnamurthy (6,256,038).

Regarding claims 2 and 7 Cabral discloses,

Wherein the first data is shape data showing the surface shape. Cabral does not clearly disclose a polygon mesh showing a simplified shape of the surface shape is acquired, wherein a bump map corresponding to the polygon mesh acquired is generated. Krishnamurthy discloses acquiring a polygon mesh (note col. 8 lines 10-20). Cabral and Krishnamurthy are combinable because they are from the same field of endeavor. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to include a polygon mesh in the system of Cabral as evidenced by Krishnamurthy. The suggestion/motivation for doing so would have been improved and more flexible techniques for fitting smooth surface.

Regarding claims 3-5, 9, 15-17, 21, 27-29, 33, 39-41, 45, 52-54, 58 Cabral discloses,

The bump map shows amounts of positional changes of respective texels on a texture map. Cabral does not clearly disclose bump map be pasted on the polygon mesh. Krishnamurthy discloses bump map corresponding to polygon mesh (note col. 48 lines 40-45). Cabral and Krishnamurthy are combinable because they are from the same field of endeavor. At the time of the invention, it

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would have been obvious to a person of ordinary skill in the art to include a polygon mesh in the system of Cabral as evidenced by Krishnamurthy. The suggestion/motivation for doing so would have been improved and more flexible techniques for fitting smooth surface.

Regarding claims 6, 30 and 55 Cabral discloses,

Acquires shape data from an object and forming vertices. Cabral does not clearly disclose polygon mesh is generated based on the shape data.

Krishnamurthy discloses polygon mesh is generated based on the shape data (note col. 8 lines 6-20, represented by vertices, unparameterized surface). Cabral and Krishnamurthy are combinable because they are from the same field of endeavor. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to include a polygon mesh in the system of Cabral as evidenced by Krishnamurthy. The suggestion/motivation for doing so would have been improved and more flexible techniques for fitting smooth.

Regarding claims 8, 20, 32, 44 and 57 Cabral discloses,

Acquires shape data from an object and forming vertices. Cabral does not clearly disclose a polygon mesh having one of a vertex number according to information on a specified vertex number and a polygon number according to information on a specified polygon number is generated. Krishnamurthy discloses polygon mesh having a vertex number (note col. 8 lines 15-25). Cabral and Krishnamurthy are combinable because they are from the same field of

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endeavor. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to include a polygon mesh in the system of Cabral as evidenced by Krishnamurthy. The suggestion/motivation for doing so would have been improved and more flexible techniques for fitting smooth surface.

Regarding claims 13, 37, 19, 16 and 43 Cabral discloses,

Acquires shape data from an object. Cabral does not disclose a polygon mesh showing a simplified shape of the surface shape of the object is acquired, wherein in the second step, the surface reflectance properties of the object are estimated by using the polygon mesh acquired. Krishnamurthy discloses polygon mesh showing shape of surface data (note col. 8 lines 6-20, represented by vertices, unparameterized surface). Cabral and Krishnamurthy are combinable because they are from the same field of endeavor. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to include a polygon mesh in the system of Cabral as evidenced by Krishnamurthy. The suggestion/motivation for doing so would have been improved and more flexible techniques for fitting smooth.

Regarding claims 18 and 42 Cabral discloses,

Acquires shape data from an object image. Cabral does not disclose polygon mesh is generated based on the image data. Krishnamurthy discloses polygon mesh is generated based on the image data (note col. 19 lines 50-60). Cabral and Krishnamurthy are combinable because they are from the same field

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of endeavor. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to include a polygon mesh in the system of Cabral as evidenced by Krishnamurthy. The suggestion/motivation for doing so would have been improved and more flexible techniques for fitting smooth.

Claims 23, 47 and 65 are rejected under 35 U.S.C. 103(a) as being unpatentable over Cabral et al in view of Aleksic et al (6,175,368).

Regarding claims 23, 47 and 65 Cabral discloses,

Wherein a bump map is generated including texel. Cabral does not clearly disclose each texel becomes zero. Aleksic discloses bump map wherein texel becomes zero (note col. 6 lines 40-53). Cabral and Aleksic are combinable because they are from the same field of endeavor. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to disclose texel becoming zero in the system of Cabral as evidenced by Aleksic. The suggestion/motivation for doing so would have been improved axis information in bump map and generating lines (note col. 6 lines 39-40 and 48-50).


Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Gregory M. Desire whose telephone number is (571) 272-7449. The examiner can normally be reached on M-F (6:30-3:00).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Eileen Lillis can be reached on (571) 272-6928. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

G.D.
November 18, 2007


GREGORY DESIRE
PRIMARY EXAMINER